

Nalco Docket No.: 7560-NES
Customer No. 000049459

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REMARKS

This is in reply to the Office Action mailed on November 4, 2005 ("Office Action") and the Interview Summary mailed on November 22, 2005 ("Interview Summary").

Claims 1-40 and 42-60 are currently pending.

Claims 18 and 52 are objected to under 37 C.F.R. § 1.75(c).

Claims 3, 7, 8, 16, 20, 21, 23, 29-40, 42 and 60 are rejected under 35 U.S.C. § 112, second paragraph.

Claims 1-3, 5-10, 15-16, 19-23, 51-53 and 60 are rejected under 35 U.S.C. § 102(b) over U.S. 5,324,404 ("Ott").

Claims 15-16, 19, 20, 26 and 60 are rejected under 35 U.S.C. § 102(b) over U.S. 5,591,812 ("Starner").

Claims 6-10, 19-23 and 27-36 are rejected under 35 U.S.C. § 103(a) over U.S. 5,324,404 ("Ott").

Claims 15-23, 26 and 60 are rejected under 35 U.S.C. § 103(a) over U.S. 5,585,446 ("Marten").

Claims 1-40 and 42-60 are rejected under the judicially created doctrine of obviousness-type double patenting over U.S. 6,569,983.

Claims 1-3, 5-8, 10, 13, 15, 19, 20, 21, 23, 28, 29, 31-34, 36, 38, 43, 45, 51 and 60 are amended to particularly point out and distinctly claim subject matter regarded as the invention.

Claim 18 is amended so that it is properly dependent on claim 16.

Claims 42 and 44 are amended to correct a nomenclature error. Support for this amendment is found in the specification at page 10, lines 25-29.

No new matter is added by this amendment.

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DISCUSSION

Interview Summary

A telephonic interview with the Examiner was held on November 17, 2005. In the interview, Applicant inquired as to the proper length of the shortened statutory period ("SSP") for responding to the Office Action mailed on November 4, 2005. The Examiner confirmed that the proper SSP was three months rather than the one-month period indicated on the PTOL-326 mailed on November 4, 2005.

Claim Objections

Claims 18 and 52 are objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant has amended claim 18 to properly depend from claim 16. Accordingly, Applicant respectfully requests withdrawal of the objection to claim 18.

With regard to claim 52, the Examiner states

Claim 52 further second amine monomer reads on the addition of the amine monomer in step c) of claim 51 process. Claim 52 depends on claim 15 and therefore reads on the addition of the same monomer.

Office Action at page 2.

Applicant respectfully traverses the objection to claim 52.

Applicant agrees with the Examiner that if the amine monomer having two reactive amino hydrogens and a tertiary amine group in claim 51 and the second amine monomer having two reactive amino hydrogens and a tertiary amine group monomer in claim 52 are the same, claim 52 is redundant.

However, Applicant respectfully asserts that insertion of "second" prior to "amine monomer having two reactive amino hydrogens and a tertiary amine group" in claim 52 clearly applies to instances where the monomer of claim 52 and the monomer of claim 51 (c) are different.

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Accordingly, Applicant respectfully asserts that claim 52 is clear, unambiguous and properly depends from claim 51 and therefore respectfully requests withdrawal of the objection to claim 52.

Claims 42 and 44 are amended to correct the erroneous species names noted by the Examiner. Accordingly, Applicant respectfully requests withdrawal of the objection to claims 42 and 44.

The Rejections under 35 U.S.C. § 112, Second Paragraph

Claims 3, 7, 8, 16, 20, 21, 23, 29-40 and 60 are rejected under 35 U.S.C. § 112, second paragraph.

With regard to claim 3, the Examiner states

Claim 3 is indefinite since it is unclear the what are the terminal epoxy groups. It is unclear whether the terminal epoxy groups are on the amine capping monomer, the reaction product, or some unspecified monomer or reactant.

Office Action at page 3.

Applicant respectfully traverses this rejection.

Applicant has amended claim 3 to clearly state that the terminal epoxy groups are on the reaction product. Support for this amendment is found in the specification at page 10, lines 10-18. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 3 under 35 U.S.C. § 112, second paragraph.

Claim 16 is rejected for lack of proper antecedent basis for "linear".

Applicant respectfully traverses this rejection.

Applicant has deleted "linear" from claim 16. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 16 under 35 U.S.C. § 112, second paragraph.

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With regard to claims 7, 8, 20 and 21, the Examiner states

In claims 7, 8, 20 and 21, the agent structure is indefinite. While the N-alkylating agent may be derived from "epihalohydrin", the N-alkylating agent does not contain an epihalohydrin-containing group ... Attention is further directed to claims 42(e), 44(d), or 60(3). Please contrast with claims 13 and 38.

Office Action at page 3.

Applicant respectfully traverses this rejection.

Applicant has amended claims 7, 20 and 33 to replace "epihalohydrin-containing group" with "epihalohydrin-reacted polyalkoxide". Support for this amendment is found in the specification at page 11, lines 10-33. In addition, claims 8, 21, and 34 are amended to recite that the epihalodrin is epichlorohydrin or epibromohydrin (i.e. the epihalohydrins from which the halogen atom is chlorine or bromine).

Applicant respectfully asserts that amended claims 7, 20 and 33 recite an alkylating agent derived from an epihalohydrin rather than an epihalohydrin-containing group. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 7, 8, 20 and 21 under 35 U.S.C. § 112, second paragraph.

With respect to claim 29, the Examiner states

Claim 29 is unclear what the "subsequently reacted amine capping monomer is subsequently reacted. Claims 29-40 are included herewith since the claims are dependent on claim 29 and do not clarify that issue.

Office Action at page 3.

Applicant respectfully traverses this rejection.

Applicant has amended claim 29 to clearly recite that the amine capping monomer having one or two reactive amino hydrogens is reacted with the epoxy groups of the oligo- and polymeric reaction products of claim 28. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 29-40 under 35 U.S.C. § 112, second paragraph.

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With regard to claim 23 and 36 the Examiner states

Claims 23 and 36 employ improper alternative groupings. The grouping lacks closed language and the species open language, i.e., containing, to define the species. It is unclear what are the metes and bounds of the grouping and the scope of the individual species. See MPEP 2173.05(h).

Office Action at page 3.

Applicant respectfully traverses this rejection.

Applicant has deleted "-containing" at each occurrence from claims 10, 23 and 36. Accordingly, Applicant respectfully asserts that the metes and bounds of the grouping are clear and respectfully requests withdrawal of the rejection of claims 23 and 26 under 35 U.S.C. § 112, second paragraph.

With regard to claim 6, the Examiner points out that "R3" is undefined. Applicant has amended claim 60 to incorporate the definition of R3 from original claim 41. See also, specification at page 6, lines 5-10. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 60 under 35 U.S.C. § 112, second paragraph.

In claim 42, the Examiner points out that "2,6-dimethylpiprazine" should be "2,6-dimethylpiperazine". Applicant has amended claim 42 to insert the correct chemical name. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 42 under 35 U.S.C. § 112, second paragraph.

The Rejection of Claims 1-3, 5-10, 15-16, 19-23, 51-53 and 60 under 35 U.S.C. § 102(b) over U.S.

5,324,404

Claims 1-3, 5-10, 15-16, 19-23, 51-53 and 60 are rejected under 35 U.S.C. § 102(b) over U.S. 5,324,404 ("Ott").

Applicant respectfully traverses this rejection.

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Applicant respectfully points out that Ott discloses grinding resins obtainable by reacting (a) a glycidyl ether of a polyphenol; (b) a polyglycidyl ether of a polyol; and (c) a compound which contains primary amino groups.

In contrast, the polymers of this invention are all derived from aliphatic glycidyl ethers. See claims 1, 15, 51 and 60. Accordingly, as Ott discloses different polymers than the polymers of this invention, Applicant respectfully requests withdrawal of the rejection of claims 1-3, 5-10, 15-16, 19-23, 51-53 and 60 under 35 U.S.C. § 102(b) over Ott.

The Rejection of Claims 15-16, 19, 20, 26 and 60 under 35 U.S.C. § 102(b) over U.S. 5,591,812

Claims 15-16, 19, 20, 26 and 60 are rejected under 35 U.S.C. § 102(b) over U.S. 5,591,812 ("Starnier").

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that Starnier discloses an amine curative that is the reaction product of monomethylamine (MMA) and an aliphatic or cycloaliphatic polyglycidyl ether. See Abstract.

In contrast, the polymer of claims 15 is the reaction product of (1) a first amine-containing monomer having two reactive amino hydrogens, (2) a second amine-containing monomer having two reactive amino hydrogens and at least one tertiary amine group, and (3) a diglycidyl ether of an aliphatic diol. The result is a structurally different polymer than the amine curative of Starnier.

More particularly, with regard to the structures shown in Starnier at cols. 3-4, Applicant respectfully points out that the tertiary amine group noted by the Examiner is the result of reaction of MMA with two equivalents of glycidyl ether, resulting in a tertiary amine incorporated in to the MMA adducts.

Polymers prepared according to this invention will also contain a tertiary amines in the polymer backbone resulting from the reaction of (1) and (2) with the diglycidyl ether of an aliphatic diol (3). Unlike Starnier, polymers prepared according to claim 15 will also contain pendant tertiary amine groups along the polymer backbone resulting from reaction of the one or both of the reactive hydrogen atoms on (2) with (3). These pendant tertiary amine groups cannot be formed according to Starnier as Starnier does not disclose Applicant's reagent (2).

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Claim 16 recites a polymer in which terminal epoxy groups in the oligo- and polymeric reaction products are capped with additional amine having one or two reactive hydrogen atoms. Claim 19 recites oligo-and polymeric reaction products in which free amino groups in the reaction products are alkylated resulting in a highly branched structure. Claim 60 recites a highly branched polymer resulting from alkylation of amino groups in polymeric materials prepared by reacting the indicated amines and diglycidyl ethers. Applicant respectfully asserts that Starner does not disclose capping of the polymer or alkylation of amino groups.

Finally, claim 26 recites a formulation of the recited polymer in at least one C₁-C₁₆ alcohol and acid. Applicant respectfully asserts that as Starner does not disclose the polymers of this invention, Starner cannot disclose compositions comprising the polymers. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 15-16, 19, 20, 26 and 60 under 35 U.S.C. § 102(b) over Starner.

The Rejection of Claims 15-23, 26 and 60 under 35 U.S.C. § 103(a) over U.S. 5,585,446

Claims 15-23, 26 and 60 are rejected under 35 U.S.C. § 103(a) over U.S. 5,585,446 ("Marten").

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that Marten discloses an epoxy resin compounds which are reaction products of compounds (A1) that contain at least two 1,2-epoxide groups per molecule, compounds (A2) that are polyoxyalkylenemonoamines that have a molecular weight of from 130 to 900, preferably about 500 to about 700, and, optionally, polyoxyalkylenemonoamines (A3) that have a molecular weight of from 900 to 5000 and/or polycarboxylic acids (A4). The resin composition additionally contains at least one hardener (B) and, if desired, customary additives (C). *See* Abstract and col. 5, lines 47-49.

Applicant respectfully asserts that claim 15 recites A polymeric composition comprising: the oligo-and polymeric reaction products of a first amine-containing monomer having two reactive amino hydrogens, a second amine-containing monomer having two reactive amino hydrogens and at least one tertiary amine group, and a diglycidyl ether of an aliphatic diol.

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Applicant respectfully asserts that Marten provides no basis for selecting an amine having two reactive amino hydrogens and a tertiary amine group from among the list of amine hardeners presented at col. 7, lines 32-62. See specification at page 7, lines 16-24 which explains the unexpected benefits of tertiary amino groups along the polymer backbone. This result is not taught or suggested by Marten. In this regard, see Marten at col. 7, lines 32-33 "The component (B) used can be, for a two component process, any known amine hardener for 1,2-epoxides."

Similarly, Marten does not provide any basis for selecting diglycidyl ethers of aliphatic diols from among the list of epoxide components presented at col. 3, line 54 to col. 5, line 14 to thereby arrive at the combination of claim 15 from which claims 16-26 depend.

With regard to claims 16, Applicant respectfully asserts that Marten does not teach or suggest capping the polymer by reacting terminal epoxy groups with an amine monomer having one or two reactive amino hydrogen atoms. Nor does Marten teach or suggest capping the polymer with the specific amines recited in claims 17 and 18.

Applicant further respectfully asserts that Marten does not teach or suggest reacting the capped oligo- and polymeric compounds with N-alkylating agents as recited in claims 19-23. Applicant respectfully asserts that the glycidyl ethers noted by the Examiner at col. 4, line 44 are not alkylating agents according to this invention (See specification at page 11, line 10 to page 12, line 19) but rather are simply a second epoxy compound which is incorporated into the resin along with the epoxide components noted above. Note also the structural differences between the glycidyl ethers listed beginning at col. 4, line 44 and Applicant's N-alkylating agents.

With regard to claim 60, Applicant respectfully asserts that Marten does not disclose the use of N-alkylating agents and further provides no basis for selecting the recited diepoxy compound from the list of epoxide components presented at col. 3, line 54 to col. 5, line 14, or for selecting the recited amines having two reactive hydrogen atoms from the amines presented at col. 5, lines 15-55 to thereby arrive at the combination of claim 60.

Further with regard to claim 60, Applicant disagrees with the Examiner that the same product will result from Marten and from claim 60 when R8 in 60, 3) is 2-hydroxypropyl. Putting aside selective choosing of reagents from the Marten disclosure, Applicant respectfully asserts that the resulting compounds will in fact be different. The N-alkylating reagents of 60, 3), which contain

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primary alkyl halide groups are more reactive than epoxy compounds and thus can react with secondary nitrogen atoms in the polymer chain and can also quaternize tertiary nitrogen atoms. This leads to a degree of branching which is not obtained from epoxides which are mostly incorporated into the polymer backbone.

With regard to claim 26, Applicant cannot find any reference in Marten to formulating the resins in C₁-C₆ alcohols and acids.

Accordingly, Applicant respectfully requests withdrawal of the rejection of 15-23, 26 and 60 under 35 U.S.C. § 103(a) over Marten.

The Obviousness-Type Double Patenting Rejection over U.S. 6,569,983

Claims 1-40 and 42-60 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-6 and 8-13 of U.S. 6,569,983.

Applicant notes this rejection and is prepared to file a terminal disclaimer if common subject matter remains when the claims of this application are in condition for allowance.

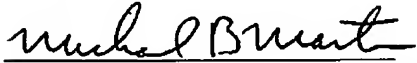
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CONCLUSION

In view of the foregoing amendment and remarks, Applicants respectfully request withdrawal of the objections to the claims and rejections under 35 U.S.C. §§ 112, second paragraph, 102(b) and 103(a) and respectfully assert that this application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,



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Date: 2/1/06